

CERTIFICATE OF ANALYSIS

CRM CX01 Unalloyed Steel



INFORMATION

Certified Reference Material of Unalloyed Steel CX01 (Ukrainian State Standard Sample DSZU No.083.15-06). Produced in conformity to the Certificate No.1016, authorized by State Committee of Ukraine for Technical Regulation and Consumer Policy

APPLICABILITY

The CRM CX01 is intended for calibration of measuring means, for metrological certification of measurements methods, for the control of errors of measurements methods at definition of a chemical compound of steels

DEVELOPER AND MANUFACTURER

Metal and Quality LLC

CERTIFIED VALUES

Elements	C	Si	Mn	S	P	Cr	Ni	Cu	N
Certified value (mass fraction in % by weight)	0.029	0.146	0.086	0.0085	0.0063	0.222	0.147	0.209	0.0160
Estimate of uncertainty (confidence 0,95)	0.002	0.004	0.002	0.0005	0.0003	0.007	0.002	0.003	0.0003

The uncertainty is estimated in accordance with the national standard DSTU GOST 8.532-2003

Information Values (mass fraction in % by weight)

As	Mo	Al	Ti	V	Co	Pb	Sn	W	Sb	Zn	B
0.01	0.031	0.014	0.003	0.003	0.011	0.009	0.012	0.007	0.005	0.004	0.0002

CERTIFICATE VALIDITY

December, 2026

SPECIFICATION

CRM is made as shaving of electro-slag steel in length of 2-5 mm

DELIVERY

CRM in glass (200 g), packed into a box and Certificate

DATE OF ISSUE

December, 2006

NOTE

Minimum sample size for chemical analysis is 0.5 g

STORAGE

Reference material should be stored in a tightly closed bottle in a dry place. When the bottle is opened for analysis, it should be stoppered immediately after use

SAFETY

The reference material and packing does not contain explosives, radioactive substances and substances which might influence health and the environment

CONTACTS

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ANALYSES

Independent data	C	Si	Mn	S	P	Cr	Ni	Cu	N
1	0,025	0,131	0,0805	0,007	0,0055	0,199	0,143	0,198	0,0154
2	0,025	0,135	0,0816	0,0072	0,0056	0,209	0,144	0,204	0,0154
3	0,025	0,140	0,082	0,0074	0,0062	0,213	0,145	0,205	0,0157
4	0,026	0,143	0,084	0,0080	0,0063	0,214	0,146	0,206	0,0158
5	0,026	0,144	0,0842	0,0083	0,0063	0,221	0,146	0,206	0,0160
6	0,028	0,1457	0,0857	0,0083	0,0063	0,222	0,1463	0,208	0,0160
7	0,0288	0,146	0,086	0,0085	0,0065	0,225	0,147	0,209	0,0163
8	0,0293	0,146	0,087	0,0085	0,0065	0,225	0,148	0,209	0,0165
9	0,030	0,147	0,087	0,0086	0,0066	0,225	0,152	0,210	0,0166
10	0,031	0,147	0,088	0,0086	0,0068	0,230	0,152	0,211	0,0167
11	0,031	0,147	0,0895	0,0086			0,152	0,2128	
12	0,031	0,1473	0,090	0,0088			0,1538	0,2173	
13	0,032	0,152		0,0092			0,154		
14	0,0334	0,156		0,0096					
Mean of independent data	0,029	0,145	0,085	0,0083	0,0063	0,218	0,148	0,208	0,0160
Median of independent data	0,029	0,146	0,086	0,0085	0,0063	0,222	0,147	0,209	0,0160
Uncertainty	0,002	0,004	0,002	0,0005	0,0003	0,007	0,002	0,003	0,0003

At the analysis the following traditional methods are used: Combustion, Coulometric, Gravimetric, Photometric, Titration, Flame Atomic Absorption Spectrometry, Inductively Coupled Plasma - Optical Emission Spectrometry. At determination of nitrogen combustion methods were applied. Only CRM and National RM were used.

PARTICIPATING LABORATORIES (Ukraine)

ArcelorMittal Krivy Rig, PJSC

Azovstal, PJSC

Dneprospetsstal (DSS), PJSC

Dneprovsky Integrated Iron & Steel Works named after Dzershinsky, PJSC

Ilyich Iron and Steel Works of Mariupol, PJSC

Khartsyzsk Tube Works, PJSC

Zaporizhstal, PJSC

Powder Metallurgy Plant, SE

Scientific Research Centre "Energostal, SE

Scientific Research Tube Institute, SE

Ukrainian Special Steels Institute, SE